REMARKS

In the second Office action, claims 1-14 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4, 963, 012, Tracy et al., in view of U.S. Patent No. 5, 650, 353, Yoshizawa et al. Applicant respectfully traverses the rejection of claims 1-14 and offers the following remarks in support of this position.

Tracy et al. is directed to large, lightweight macroscopic mirrors, like heliostat mirrors and the like, that use a SiO_2 layer on a metal foil substrate (see col. 1, lines 1-3). The problem confronting Tracy et al. is that there was no suitable passivation method available to protect such mirror structures from the elements of outdoor use (see col. 2, lines 9-11). Mirror degradation effects are enumerated in column 2. Tracy et al. realize that a mirror capable of withstanding outdoor use for prolonged periods of time, like 20 years or more, without degrading reflective properties is needed (see col. 2, lines 45-50).

Tracy et al. show a heliostat structure equipped with a mirror surface constructed on a metal foil substrate in Figure 7, and an enlarged cross-sectional view of the mirror structure having a metal foil substrate 130 planarized with SiO_2 132 and having a silver 136, SiO_2 interface passivated with a silver nitride layer 134 in Figure 8 according to the invention (see col. 3, lines 57-65). For a more detailed description of Figure 7 refer to col. 8, starting at line 33, and of Figure 8, refer to col. 9, starting at line 43. From the text of column 8, it is clear that the substrate of the mirror structure of Figure 7 is a thin, flexible metallic sheet 130 such as rolled stainless steel, aluminum or copper foil (lines 46-48) and the surface of the metallic layer 130 is coated with a glassy SiO_2 layer 132 by a sol-gel process for coating (lines 49-50). Mirror substrates of polymer plastic sheets are shown in Figures 10 and 12.

Yoshizawa et al. is directed to a method for producing silicon-on-insulator substrates for the semiconductor industry. The method comprises superposing and bonding at least three single crystal silicon wafers through a medium of SiO_2 film formed on each of the wafers (see Abstract). Yoshizawa et al. is directed primarily to semiconductor wafer technology (see col. 1, starting at line 16). None of Yoshizawa's processes are related to a mirror or the making thereof.

In contrast to these prior art techniques and products, independent claim 1 of the instant application recites a macroscopic mirror comprising a silicon substrate of a predetermined shape

and macroscopic size cut from a silicon wafer, and independent claim 11 recites a method of making the same comprising cutting a substrate section from the prepared silicon wafer to a predetermined shape and macroscopic size. Neither Tracy et al. nor Yoshizawa et al., taken individually or in combination, teach or suggest a macroscopic mirror having a silicon wafer section substrate or the manufacture thereof as recited in claims 1 and 11. Rather, Tracy et al. teach a flexible, metal foil substrate coated with SiO_2 by a sol-gel process, and Yoshizawa et al. teach the bonding of at least three silicon wafers using a medium of SiO_2 for semiconductor substrates.

There is no suggestion or motivation in Tracy et al. to use a silicon wafer section as a substrate of the macroscopic mirror structure, and likewise, there is no suggestion or motivation in Yoshizawa et al. to use the silicon-on-insulator substrate as a substrate of a macroscopic mirror. The only suggestion and motivation of such a combination is in Applicant's teaching of the instant application and it is impermissible to use Applicant's own teachings to combine references. Accordingly, independent claims 1 and 11 are distinguishable over the references Tracy et al. and Yoshigawa et al. for at least the above given reasons , and therefore, novel, unobvious and patentable.

Claims 2-10 are dependent from claim 1 and claims 12 -14 are dependent from claim 11. Each of these dependent claims include all of the limitations of their respective parent claims and therefore, are also considered novel and patentable over Tracy et al. and Yoshizawa et al. for the same reason given above for their parent claims.

In addition, there are limitations found in these dependent claims 2-10 and 12-14 of the instant application that are distinguishable over Tracy et al. and Yoshizawa et al. in their own right. For example, claim 4 recites that etched, rough surface side of the silicon substrate serves as a backing plate for bonding the mirror to a scan drive mechanism; claim 5 recites that the plurality of layers comprise a bottom layer, a middle reflective medium layer, and a top protective coating layer; claim 6 is dependent from claim 5 and recites that each layer of the plurality of layers is applied by sputtering to a predetermined thickness; and claim 8 recites the substrate section is cut from the wafer in the form of an ellipse having a major axis dimension of approximately 70 mm and a minor axis dimension of approximately 50 mm.

In addition, claim 12 recites that the substrate section is cut from the silicon wafer in a cookie cutter fashion, and claims 10 and 13 recite that the substrate section is laser cut from the silicon wafer. Moreover, claim 14 recites steps of applying the plurality of layers. Neither Tracy et al. nor Yoshizawa et al., taken individually or in combination, teach or suggest any of the aforementioned limitations.

None of the above mentioned limitations recited in claims 1-14 have been shown to be taught or suggested by Tracy et al. and Yoshizawa et al., either taken individually or in combination. Therefore, it is respectfully requested that the originally submitted claims 1-14 of the instant application be re-examined and reconsidered for allowance based on the recitation thereof.

In view of the above, the claims 1-14 are considered allowable and the instant application considered in condition for allowance. Thus, it is respectfully solicited that the instant application be given an early issuance.

Respectfully submitted,

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